Remarks

Claims 18-22 and 24 are pending in this application. Claims 1-17 and 23 have been canceled. New claim 24 is supported in the specification in Figure 5b-5c. No new matter has been made by the addition of claim 24.

Objections

The specification and the claims have been amended to reflect the sequence identifiers to be in compliance with the rules. No new matter has been made by the amendments made in the specification and claims. Withdrawal of this objection is respectfully requested.

Claim Rejection Under 35 USC § 112, second paragraph

Claim 23 is rejected under this section for failing to particularly point out and distinctly claim the subject matter which Applicants regard as their invention.

Claim 23 has been canceled and new claim 24 has been added. Claim 24 particular points out and distinctly claims the subject that Applicants regard as their invention. Withdrawal of this rejection is now in order.

Claim Rejection Under 35 USC § 112, first paragraph

Claims 17-23 are rejected under 35 USC § 112, first paragraph as containing subject matter which was not described in the specification in a manner that would reasonably convey to one skilled in the art that Applicants had possession of the claimed invention at the time the application as filed.

Claim 23 was rejected for failing to disclose a specific nucleic acid sequence for the claimed vector. Claim 23 has been canceled. New claim 24 recites a specific nucleic acid that is identified using the SEQ ID NO to be in compliance with the rules and written description requirement. Claim 20 has been amended to recite the vector comprising the nucleic acid sequence recited in claim 24.

Claims 17-19 were also rejected under this section. In response, claim 17 has been canceled and claims 18 and 19 have been amended to recite the particular nucleic acid sequence that Applicants regard as their invention.

Applicants submit that the amended claims supported in the specification show that Applicant were in possession of the claimed invention.

It is believed that this rejection has been overcome and notice to that effect is respectfully requested.

Claim Rejection Under 35 USC § 103

Claim 17 is rejected under 35 USC § 103 (a) as being unpatentable over Wang et al in view of Bosslet et al and Friend et al.

Wang et al teaches a monoclonal antibody which binds to an antigen expressed on the surface of rat hepatoma cells fused to *E. coli* β-glucoronidase formed by linking β-glucoronidase to the antibody via a thioether bond by chemical manipulation. Bosslet teaches a fusion protein consisting of a humanized anti-CEA antibody and human β-glucoronidase prepared by recombinant technology. Friend et al is cited for teaching that bacterial glucoronidase has an optimal turnover at pH 6.5 whereas mammalian glucoronidase has optimal turnover at pH 4. The Patent Office argues that it would be *prima facie* obvious to make a fusion construct comprising nucleic acids encoding the antibody and *E. coli* β-glucoronidase of Wang following the methods of Bosslet to obtained the claimed invention and that one skilled in the art would be motivated to do so given the teaching of Friend of a higher turnover rate of the bacterial enzyme versus the human enzyme.

Applicants traverse this rejection for the following reason.

Neither Wang et al or Bosslet et al teach the claimed antibody fragment fusion nucleic acid sequences or the claimed vector constructs. Moreover, neither reference teaches or suggests that expression of the claimed constructs would produce functionally active fusion molecules in the cytoplasm which retain antigen binding properties in an *E. coli* that is deficient in thioredoxin reductase. It would not be *prima facie* obvious to combine these references to produce the claimed construct which surprisingly express a functional active molecule composed of the cytoplasmic, non-disulfide bridged *E. coli* β-glucoronidase and Fab fragment requiring intramolecular cystine bridges for correct folding in the cytoplasm. The addition of Friend et al does not supply the necessary teaching or suggestion that the expressed molecule would be soluble and refolding would be unnecessary to produce a functionally active protein.

Accordingly, Applicants submit that it would not be *prima facie* obvious to combine the above references at the time of filing to make the claimed nucleic acid sequences or constructs. Withdrawal of this rejection is respectfully requested.

Should the Examiner believe that an interview would advance the prosecution of this application, the Applicants invite her to contact the undersigned at 908.231.4658.

Respectfully submitted,

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